I. The Claims Define Patentable Subject Matter

The Office Action rejects claims 1-5, 7, 8 and 10-24 under 35 U.S.C. §103(a) over "Applicants admitted art" (APA) shown in Fig. 11 of the present application in view of Toshimichi et al. (JP 8-328002).

APA, whether alone or in combination with Toshimichi, does not disclose or suggest an electro-optical device including, inter alia, a plurality of pixels formed in a matrix disposed within a pair of substrates including a step portion being substantially equal in height to microlenses thoughout a region completely overlapping a sealing material, as recited in claim 1, and as similarly recited in claims 4, 7, 10 and 12-15.

Toshimichi does not disclose the step portion formed throughout a region completely overlapping the sealing material. In fact, Toshimichi does not specifically disclose the positional relationship between a sealing material and a step portion. Further, the step portion 303 of Toshimichi is not formed throughout a periphery of a first substrate, but is instead formed only along a portion of the periphery of a substrate.

Regarding claims 16 and 24, APA, whether alone or in combination with Toshimichi, does not disclose or suggest an electro-optical device including, inter alia, a first substrate including a step portion formed on one side of the first substrate in a region overlapping the sealing material, the step portion being substantially equal in height to microlenses, a width of the step portion being wider than a width of the sealing material.

For at least these reasons, it is respectfully submitted that claims 1, 4, 7, 10, 12-16 and 24 are patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed as well as for the additional features they recite. Applicant respectfully requests that the rejection under 35 U.S.C. 103 be withdrawn.

OIPE
OCT 0 1 2002
PATENT & TRADEMARK OFFICE

II. Conclusion

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

RECEIVED
OCT -2 2002
TECHNOLOGY CENTER 2800

James A. Oliff
Registration No. 27,075

Benjamin M. Halpern
Registration No. 46,494

JAO:BMH/gpn

Attachment:
Appendix

Date: October 1, 2002

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461

OIPE JC17 OCT 01 2002 PATENT & TRADEMARK OFFICE

RECEIVED OCT -2 2002 TECHNOLOGY CENTER 2800

APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claims:

1. (Amended) An electro-optical device comprising:

a pair of substrates including a first substrate and a second substrate adhered together with a sealing material;

an electro-optical material enclosed between said pair of substrates; and

a plurality of pixels formed in a matrix disposed within said pair of substrates, said first substrate including:

1) a lens array substrate provided with a plurality of convex microlenses with one microlens corresponding to each of said plurality of pixels,

2) a step portion being substantially equal in height to said microlenses ~~in~~ throughout a region completely overlapping said sealing material, and

3) a transparent cover adhered to the lens array substrate with an adhesive that covers said microlens and said step portion.

4. (Amended) A method for fabricating an electro-optical device which comprises a pair of substrates including a first substrate and a second substrate, a liquid crystal enclosed between the pair of substrates, and a plurality of pixels formed in a matrix disposed within said pair of substrates, said first substrate including a lens array substrate, said method comprising:

forming a plurality of convex microlenses with one microlens corresponding to each of said plurality of pixels on said lens array substrate;

forming a step portion substantially equal in height to said microlenses ~~on~~ throughout a periphery of said first substrates;

adhering a transparent cover to said lens array substrate with an adhesive to cover said microlenses and said step portion;

forming a sealing material;

superposing the first substrate on the second substrate to face said step portion with the sealing material therebetween, the periphery of the first substrate completely overlapping the sealing material; and

curing said sealing material while pressing said first substrate on the second substrate.

7. (Amended) A method for fabricating an electro-optical device which comprises a pair of substrates including a first substrate and a second substrate, an electro-optical material enclosed between the pair of substrates, and a plurality of pixels formed in a matrix disposed within said pair of substrates, said first substrate including a lens array substrate, said method comprising:

forming a plurality of convex microlenses with one microlens corresponding to each of said plurality of pixels on said lens array substrate;

forming a step portion substantially equal in height to said microlenses ~~on~~ throughout a periphery of said lens array substrate;

bonding a transparent cover to said lens array substrate with an adhesive so as to cover said microlenses and said step portion;

forming a sealing material;

superposing the first substrate on the second substrate to face said step portion with said sealing material therebetween, the periphery of the first substrate completely overlapping the sealing material; and

curing said sealing material while applying pressure from an exterior of said pair of substrates.

10. (Amended) An electro-optical device comprising:

a pair of substrates including a first substrate and a second substrate adhered together with a sealing material; and

an electro-optical material enclosed between said pair of substrates, said second substrate having a plurality of scanning lines, a plurality of data lines intersecting said plurality of scanning lines, a pixel having a switching device connected to each of said scanning lines and each of said data lines, and a pixel electrode connected to said switching device, and the first substrate including:

1) a lens array substrate provided with a plurality of convex microlenses with one microlens formed corresponding to each of said pixel,

2) a step portion being substantially equal height to said microlenses ~~in the~~throughout a region completely overlapping said sealing material, and

3) a transparent cover adhered to the lens array substrate with an adhesive that covers said microlenses and said step portion.

12. (Twice Amended) An electro-optical device, comprising:

a pair of substrates including a first and a second substrate adhered together with a sealing material;

an electro-optical material enclosed between said pair of substrates; and

a plurality of pixels formed in a matrix disposed within said pair of substrates,

said first substrate including:

1) a lens array substrate provided with a plurality of convex microlenses with one microlens corresponding to each of said plurality of pixels, the plurality of microlenses being provided at one side of the first substrate,

2) a step portion formed on the one side of the first substrate ~~in~~ throughout a region completely overlapping said sealing material, and

3) a transparent cover adhered to the lens array substrate with an adhesive that covers said microlenses and said step portion.

13. (Amended) A method for ~~fabrication~~ fabricating an electro-optical device which comprises a pair of substrates including a first substrate and a second substrate, a liquid crystal enclosed between the pair of substrates, and a plurality of pixels formed in a matrix disposed within said pair of substrates, said first substrate including a lens array substrate, said method comprising:

forming a plurality of convex microlenses with one microlens corresponding to each of said plurality of pixels on said lens array substrate, the plurality of microlenses being formed at one side of the first substrate;

forming a step portion on the one side of the first substrate ~~on~~ throughout a ~~peripheral~~ periphery of said first substrate;

adhering a transparent cover to said lens array substrate with an adhesive to cover said microlenses and said step portion;

forming a sealing material;

superposing the first substrate on the second substrate to face said step portion with the sealing material therebetween, the periphery of the first substrate completely overlapping the sealing material; and

curing said sealing material while pressing said first substrate on the second substrate.

14. (Amended) A method for ~~fabrication~~ fabricating an electro-optical device which comprises a pair of substrates including a first substrate and a second substrate, an electro-optical material enclosed between the pair of substrates, and a plurality of pixels

formed in a matrix disposed within said pair of substrates, said first substrate including a lens array substrate, said method comprising:

forming a plurality of convex microlenses with one microlens corresponding to each of said plurality of pixels on said lens array substrate, the plurality of microlenses being formed on one side of the first substrate;

forming a step portion on the one side of the first substrate ~~on~~ throughout a ~~peripheral~~ periphery of said first substrate;

bonding a transparent cover to said lens array substrate with an adhesive so as to cover said microlenses and said step portion;

forming a sealing material;

superposing the first substrate on the second substrate to face said step portion with the sealing material therebetween, the periphery of the first substrate completely overlapping the sealing material; and

curing said sealing material while applying pressure from an exterior of said pair of substrates.

15. (Twice Amended) An electro-optical device, comprising:

a pair of substrates including a first and a second substrate adhered together with a sealing material;

an electro-optical material enclosed between said pair of substrates, said second substrate having a plurality of scanning lines, a plurality of data lines intersecting said plurality of scanning lines, a pixel having a switching device connected to each of said scanning lines and each of said data lines, and a pixel electrode connected to said switching device, and the first substrate including:

1) a lens array substrate provided with a plurality of convex microlenses with one microlens corresponding to each of said plurality of pixels, the plurality of microlenses being formed on one side of the first substrate,

2) a step portion formed on the one side of the first substrate ~~in~~ throughout a region completely overlapping said sealing material, and

3) a transparent cover adhered to the lens array substrate with an adhesive that covers said microlenses and said step portion.

16. (Amended) An electro-optical device, comprising:

a first substrate;

a second substrate;

a sealing material that adheres the first and second substrates together;

an electro-optical material disposed between the first and second substrates; and

a plurality of pixels arranged in a matrix and disposed between the first and second substrates;

the first substrate including:

a lens array substrate that defines a plurality of convex microlenses,

~~a substantially planar portion, at least a portion of the substantially planar portion being disposed opposite the sealing material,~~

a step portion formed on the one side of the first substrate in a region overlapping the sealing material, the step portion being substantially equal in height to the microlenses, a width of the step portion being wider than a width of the sealing material,

a transparent cover, and

an adhesive that adheres the transparent cover to the lens array substrate.

24. (Amended) A method of manufacturing an electro-optical device that includes a first substrate having a lens array substrate and a transparent cover, a second substrate, an electro-optical material disposed between the first and second substrates, sealing material, and a plurality of pixels arranged in a matrix disposed between the first and second substrates, the method comprising:

forming a plurality of microlenses on the lens array substrate;

~~forming a substantially planar portion on the first substrate;~~

forming a step portion on the one side of the first substrate on a peripheral of the first substrate, the step portion being substantially equal in height to the microlenses;

adhering the transparent cover to the lens array substrate;

superposing the first substrate over the second substrate to face the step portion with the sealing material ~~disposed~~ therebetween ~~such that at least a portion of the substantially planar portion is disposed opposite the sealing material~~; and

curing the sealing material while pressing the first substrate toward the second substrate so that a width of the step portion is wider than a width of the sealing material.